TRAINING & SIMULATION INDUSTRY SYMPOSIUM

NAWC
Training Systems Division
NAVAL AIR WARFARE CENTER

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Littoral Combat Ship
Training System Executive Agent

Disclaimer

- **The information about to be presented affords industry partners insight into on-going and pending acquisitions**

- **Significant portions of the information are planning in nature and are subject to change throughout the acquisition planning and acquisition strategy approval process, and in response to NAVAIRSYSCOM, DASN(A&LM) and DPAP peer reviews**

- **The PCO is your source for the most current information**

Littoral Combat Ship (LCS) Training

LCS Training Systems Executive Agent (TSEA) "Briefing to Industry"

- Concurrent with General Session this afternoon – to be held in the ***Yellowtail Meeting Room***
- Time – 3:00 pm to 5:00 pm
- The objective of the LCS TSEA Briefing to Industry 2011 is to provide an early overview of current efforts and future plans relative to LCS training.
- This is also an opportunity for Industry to meet the stakeholders and offer input.
- Anticipate additional update briefings, perhaps I/ITSEC.

LCS TSEA
"Briefing to Industry"

	Agenda	
	Topic	**Presenter**
1500-1510	**Welcome/Introductions**	**John Freeman (LCS TSEA)**
	Agenda	**Greg Pryor (LCS DTSEA)**
1510-1530	**LCS Shipbuilding Program**	**Andrew Payor (PMS 501L)**
1530-1550	**LCS Mission Module Program**	**Robin Kime (PMS 420L)**
1550-1600	**LCS Shore Based Trainers**	**Joe Shifflett (CSCS)**
1600-1630	**LCS Training Overview & Development**	**Greg Pryor (LCS DTSEA)**

Front End Analysis (FEA)

Recommendations
Alternative Training Strategies
Virtual Ship Operations
Virtual Ship Maintenance

LCS FEA Recommendations

- From late 2008 - present, PMS 501 and PMS 420 have sponsored an LCS FEA to recommend to the Navy the proposed training process to achieve T2Q and T2.
- FEA Advisory Board (AB) endorsed Virtual-Reality (VR) Centric training.
  - FEA AB composed of: N86, N125, PMS 501, PMS 420, CNSF, LCSRON, SWOS, NAVSEA 05H, NETC, USFFC.
- PMS 501 and PMS 420 working with Naval Air Warfare Center – Orlando, to assume duties as the LCS "Training Executive Agent.
  - Continue where FEA concludes
  - Develop Enabling Objectives and Terminal Objectives
  - Prepare RFIs and SOW for Industry
  - Track and manage training development

FEA Cont'd

Alternative Training Strategies Studied by (FEA)

I. Virtual Ship Centric

Ship

Critical Tasks Not Otherwise Satisfied

Simulators

Higher Risk Watchstations

Virtual Interactive Ship

Full crew networked together

Inport and fast cruise

- Exercise watch quarter and station bill
- Set material condition
- Tactical/damage control scenarios
- Complex evolutions
- Maintenance

II. Simulator Ship Centric

Ship

Critical Tasks Not Otherwise Satisfied

Full size ship simulators

Simulators (All Spaces, Equipment, Systems)

Inport and Fast Cruise

- Exercise watch quarter and station bill
- Set material condition
- Tactical/damage control scenarios
- Complex evolutions
- Maintenance

Virtual Interactive Ship

III. Seaframe Centric

LCS of Each Variant Dedicated to Training in CONUS Homeports

Inport and Underway

Ship

- Ship familiarity
- PQS/operating procedures not covered by simulators
- Exercise watch quarter and station bill
- Set material condition
- Tactical scenarios
- Complex evolutions
- Maintenance

Simulators

Training More Suitable to Simulators

Virtual Interactive Ship

Classrooms & Part Task Trainers

Virtual Ship Operations

- Accessed through electronic classrooms at LCS Training Facilities and learning centers
- Provides capability to practice and / or demonstrate tasks for qualification and certification
- High fidelity simulation of ship interior / exterior spaces, systems and surrounding environment to include full visualization
- Integrated physics-based models for all major systems with which the crew interfaces: engineering systems; combat systems; ship maneuvering; interior and exterior communications; deck and aviation systems; mission bay handling, launch and recovery; and damage control systems, fittings, and progressive flooding / fires
- Networked with simulators (visualization, communications, system operations)
- Interface with Virtual Ship Maintenance for scenario driven casualties.
- Support individuals, multiple individuals, teams and whole crew with / without instructor
- Support multiple individual and team training events simultaneously, for multiple crews and mission package crews at an LTF
- Instructor developed inport and underway training scenarios
- Record and report individual, team and crew performance compared to prescribed standards to include session playback and

ONR Project LCS 1 Virtual Maintenance Performance Aid

Virtual Ship Maintenance

- Library of equipment and the associated Planned Maintenance System (PMS), technical publications, and other procedures
- Library of system/sub-system and procedural questions that support verification that the trainee knows equipment parameters, maintenance safety precautions, etc.
- Select specific equipment from a menu and load the library materials required to conduct a maintenance procedure
- Tagout the equipment to include identifying the specific elements that must be tagged, completion of the tagout forms, gaining tagout approval, and hanging the tags in the correct locations
- Locate and collect the tools, consumables, and parts required for the maintenance using the VSO system, if required by the training scenario
- 3D visualization of the exterior and interior of the equipment
- Open the equipment using the required tools, visualize internal components, inspect internal components visually, and use prescribed test equipment when required
- Identify components that require replacement based on the trainees' correct inspection or testing of components
- Replace faulty components, untag equipment and conduct prescribed operational tests
- Seamless initiation of the VSM from VSO following detection of an abnormal condition that requires troubleshooting. This includes troubleshooting procedures directed by EOSS or CSOSS and the real-time impact on system performance while

Training Strategy

Train to Qualify (T2Q)/Train to Certify (T2C)
T2Q Process
Getting to T2Q and T2C
Training Approach

T2Q/T2C

Capabilities Development Document (CDD) for LCS Flight 0+	
Train to Qualify (T2Q)	**Train to Certify (T2C)**
Process of training, in an off-ship training environment, an individual in the knowledge, skills, and abilities required to competently perform tasks, at a basic level associated with a designated (specific) shipboard watch station or position.	Process of training, in an off-ship training environment, a watch team in the knowledge, skills, and abilities required to competently perform tasks, at an advanced level associated with a designated (specific) shipboard watch station or position.

CDD Requirement	Threshold	Objective
Core Crew	T2Q	T2C
Mission Package	T2C	

T2Q and T2C are unique Training Requirement for LCS. This is not the case for any other legacy ship in the Fleet!

Training Strategy (cont'd)

T2Q Process

PQS Measures, Metrics & Standards for Skill Positions (KSAs)
Tool Kit Elements – SOP, CSOSS, EOSS, Battle Orders, Standing Orders, Fire Point Procedures

FUNDAMENTALS	SYSTEMS	OPERATIONS/TASKS

Classroom – Group Paced and CBT ***(Computer Based Training)***

Tactical Training Equipment (TTE) – Part Task Trainer or Total Ops ***(Labs-Training Devices)***

Low Fidelity Simulation

Medium Fidelity Simulation

High Fidelity Simulation ⇨

Live Equipment ⇨

Integrated/ Collective Training

TEAM TNG/ CERT
Final Qual
ULT
FST

Reconstruction – Training Feedback, Performance Record, Record Keeping, Legal Records, Audio/Visual/Keystroke

System & Ops – Shore Training
- A-School
- C-School
- J-School
- F-School

Tactics,Technique & Procedures (TTP) – T2Q
- High Fidelity SIM
- PQS Related Task – 300 Level
- School/Lab Mock-Up

Rehearse/Refresh/Interoperability
- Individual Training in a Team Environment
- Interoperability
- Repetition

Getting to T2Q and T2C

- T2Q/T2C training systems and curriculum on new systems must be developed.
- Development is tied to acquisition strategy – needed to wait.
- Some T2Q/T2C systems exist:
  - Current Tactical Shore Based Trainers (limited T2Q/T2C capability).
  - SWOS OOD, JOOD COIs in place, RCO and TAO coming online.
- Majority of T2Q/T2C training to be funded and developed between 2012-2015, and delivered to Navy schools starting in late 2014/early 2015.
- Until T2Q/T2C online, crews will receive vendor training and under instruction "school-ship" opportunities on new systems.

Training Strategy (cont'd)

Training Approach

- Sailors complete T2Q training in 3 tiers
  - Officer billet specialty / Enlisted NEC
  - Cross training, Fleet schools and other qualifica
- LCS Training Facilities (LTF) enables
  - Individual crew members to complete T2Q requirements
  - LCSRON / COs to assess individuals for qualification
  - Off-hull crews to conduct refresher training
  - LCSRON to assess watch team certification events (T2C)
- One LTF in each CONUS homeport area
  - Different mixes of virtual, simulator and seaframe training

Learning Centers

Learning Centers

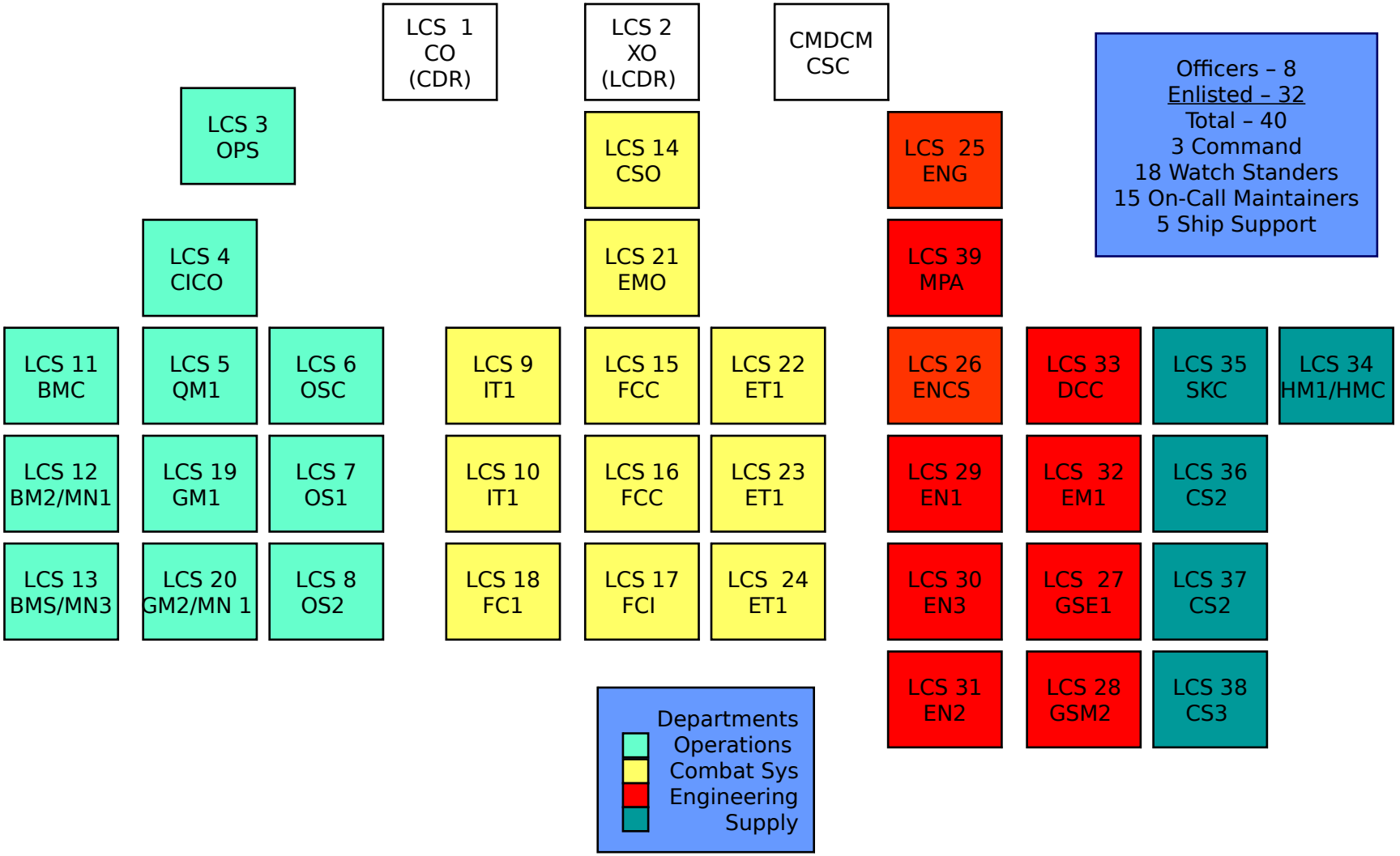
Learning Centers
CS Training Facilitie

Crew Requirements Rotation and Homeport

LCS-1 and LCS-2 Crews

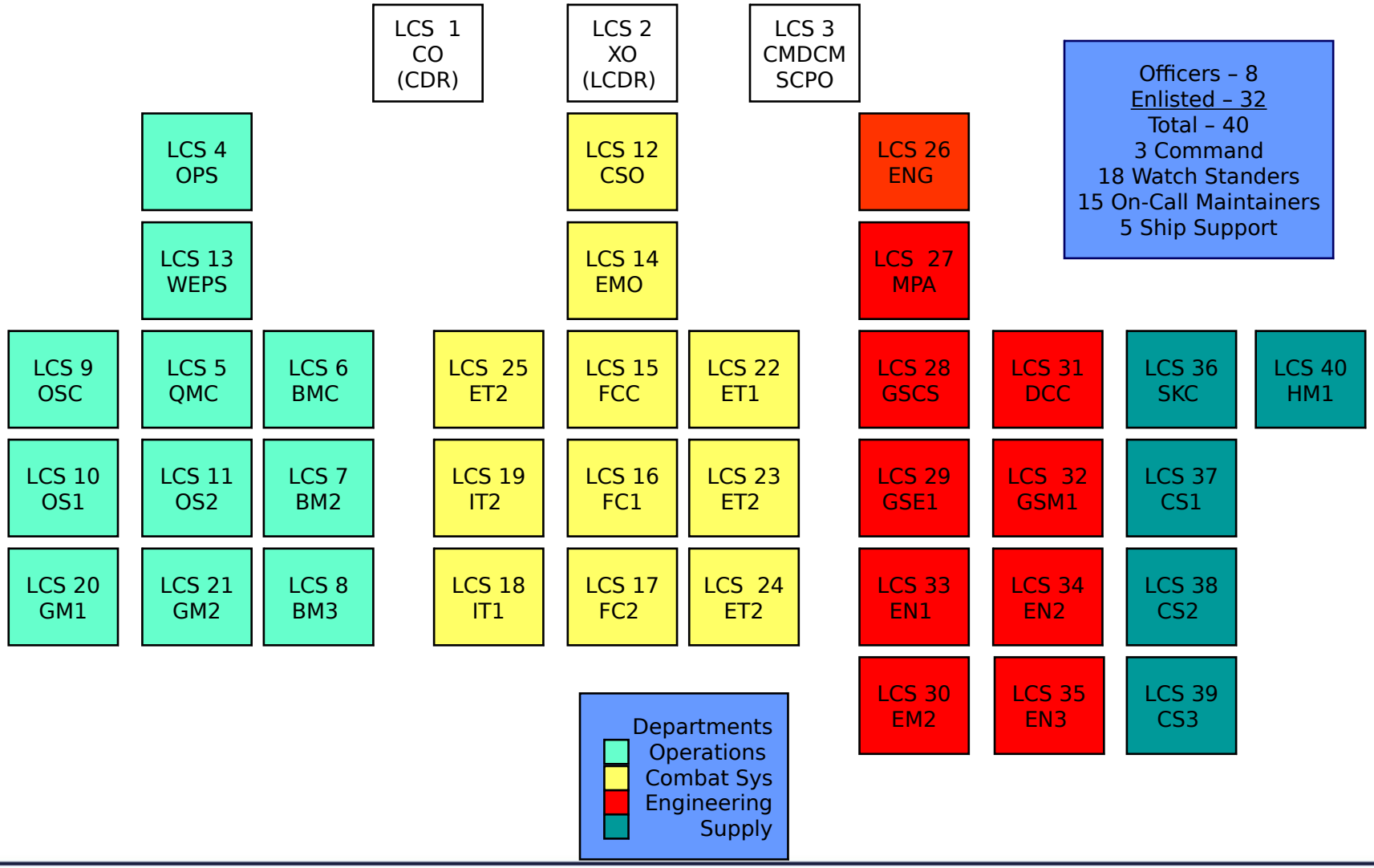
Crew Requirements Rotation and Homeport (cont'd)

LM LCS-1 Crew



Crew Requirements Rotation and Homeport (cont'd)

GD LCS-2 Crew



Crew Requirements Rotation and Homeport (cont'd)

ASW Mission Module Detachment

ASW NEC SUMMARY:
0417 – ASW Specialist
0450 – Advanced Acoustic Analyst
9517 – SNAP 3M System Coordinator

ASW01
OIC
LT (1110/9268)

	ASW02 **STGCS** 0417/0450	ASW03 **STGC** 0417/0450 9517	
ASW04 **STG1** 0450/0417	ASW05 **STG1** 0450/0000	ASW06 **STG1** 0450/0000	ASW14 STG3 0450/0000
ASW07 **STG2** 0450/0000	ASW08 **STG2** 0450/0000	ASW09 **STG2** 0450/0000	ASW15 STG3 0450/0000
ASW10 **STG2** 0450/0000	ASW11 **STG2** 0450/0000	ASW12 **STG2** 0450/0000	ASW13 **STG3** 0450/0000

Officer: 1
Enlisted: 14
Total: 15

- 1 Command
- 12 Watchstanders
- 2 On-call maintainers

Legend

System Operator

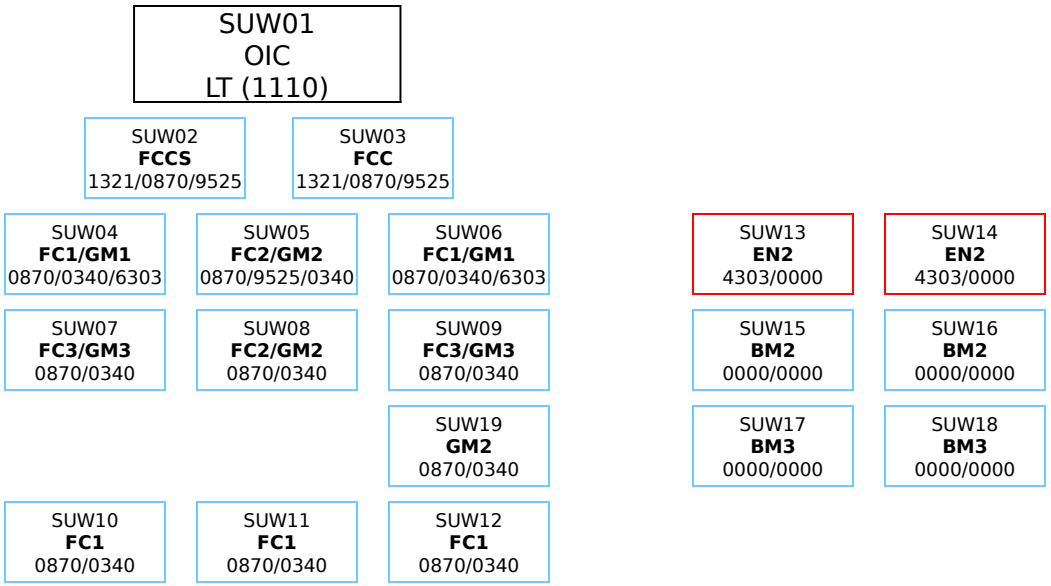
Boat Maintenance

SUW Mission Module Detachment

SUW NEC SUMMARY:
1321 – COMBAT SYSTEMS SR ENLISTED(CSSE)
0870 – 30MM MK46 MOD 2 GWS
9525 – AMMO SUPPLY ADMIN
0340 – GCCS-M 4.0 COP OPERATOR
6303 – NALCOMIS AVIATION MAINT. OMA SYSTEM ADMINISTRATOR

Officer: 1
Enlisted: 18
Total: 19

- 19 Watchstanders



Legend

System Operator

Boat Maintenance

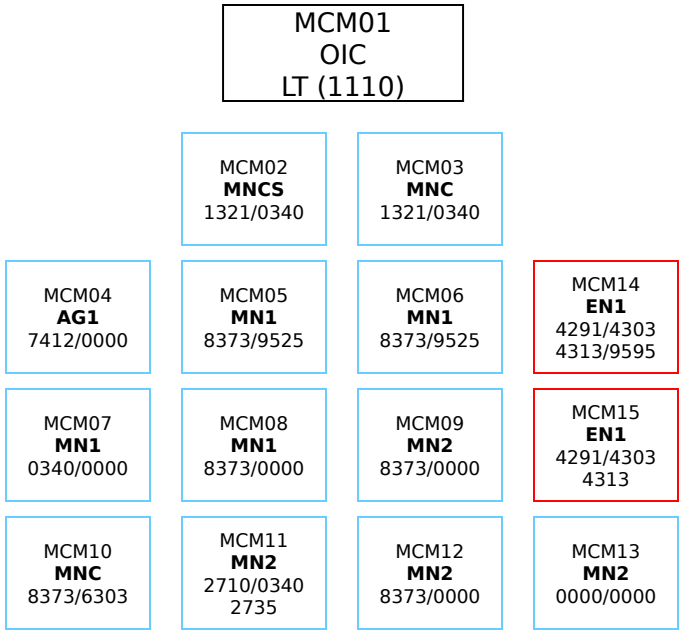
Crew Requirements Rotation and Homeport (cont'd)

MCM Mission Module Detachment

MCM NEC SUMMARY:
1321 – COMBAST SYSTEMS SR ENLISTED (CSSE)
0340 – GCCS-M 4.0 COP OPER.
7412 – ANALYST/FORECASTER
8373 – MH-60S OAMCM PIPELINE
9525 – AMMO SUPPLY ADMIN
4291 – REFRIG AC SYS TECH
4303 – CUMMINS DIESEL TECH
4313 – OUTBOARD ENG MECH
6303 – OMA SA/A PIPELINE
2735 - JNETCORE

Officer: 1
Enlisted: 14
Total: 15

- 1 Command
- 12 Watchstanders
- 2 On-call maintainers



Legend

System Operator

Boat Maintenance

Training Development Long Range Plan

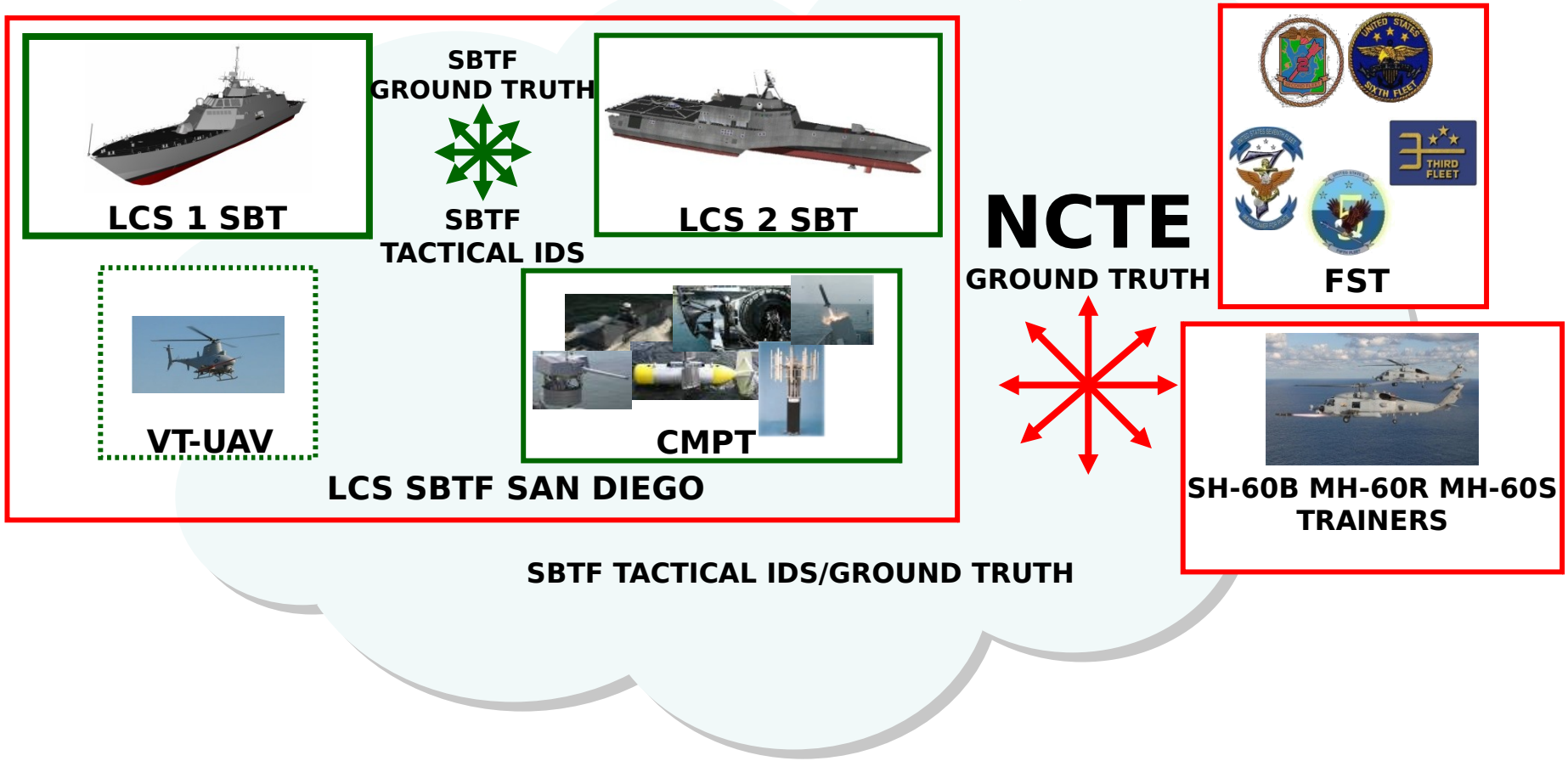
Future Planned Trainers
Future SBTF Interoperability
SBT PB12 Procurement Plan

Future Planned Trainers / Upgrades

- All current physical trainers support both T2Q pipeline courses, and Fleet Rapid Refresh training.
- In 2015:
  - Expect to deliver Mission Bay Launch and Recovery Trainer to support both T2Q pipeline courses, and Fleet Rapid Refresh training.
- In 2016:
  - Expect to land 1st East coast tactical trainer and Mission Bay Launch and Recovery Trainer in Mayport, Fla.
- In 2020:
  - Expect to land 2nd Integrated SBT in San Diego, to support growing number of crews.

Training Development Long Range Plan (cont'd)

Future SBTF Interoperability



Training Development Long Range Plan (cont'd)

Shore-Based Trainer PB12 Procurement Plan

LCS Trainers (OPN)						
Trainer	Previously Installed	Planned End State	Planned Installation	Planned Installation	Planned Installation	Total Planned
Bridge Tactical Trainer (Fully Integrated Combat Systems Consoles / Engineering Console)	San Diego (LM & GD, Partial Capability)	1 Full & 1 Partial Trainer 2013 San Diego	2016 Mayport	2020 San Diego		4
Bridge Partial Ship Handling only			2012 San Diego	2016 Mayport		2
Combat Systems			2012 San Diego		2016 Mayport	2
Helo Control			2015 San Diego	2017 Mayport		2
Engineering Stand Alone			2015 San Diego	2017 Mayport		2
Crew Served Weapons			2012 San Diego	2016 Mayport	2020 San Diego	3
Mission Bay/Hangar			2014 San Diego	2016 San Diego		2
Search & Rescue Simulator			2014 San Diego	2016 Mayport		2
Medical Simulator			2015 San Diego	2017 Mayport		2
Note 1: Above schedule is thru 2020 only. Any additional trainers required after 2020 will be added once CNO lay down plan is promulgated.						

Description Summary of Program Requirements

PORTS LCS Mission Modules
PORTS LCS Seaframe Combat Systems
LCS Mission Bay Trainers
LCS Contractor Operations & Maintenance
Support (COMS)
LCS Training Courses Development

PORTS LCS Mission Modules

Description / Summary of Program Requirements

- Develop simulations of the Mine Warfare (MIW), Surface Warfare (SUW), and Anti-Submarine Warfare (ASW) mission modules with associated support systems
- Develop networked Mission Control Center (MCC) / Integrated Control Center (ICC) 2 mission module console mockups for both LCS hull types
- PC-based Open-architecture for Reconfigurable Training Systems (PORTS)

Acquisition Strategy

- PORTS ID/IQC (planned award Sep 2011)

Period of Performance

- 30 months (all options)

Milestones

2nd Qtr FY 12	3rd Qtr FY 12
RFP Release	Contract Award

Point of Contact

Name: John Freeman

Organization: NAWCTSD, Surface

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Funding

- $4.5M

Current Contract/Original Developer/OEM (if recompete)

- N61339-05-D-0027 / Northrop Grumman Information Systems

PORTS LCS Seaframe Combat Systems

Description / Summary of Program Requirements

- Develop simulations of all modes / roles of the LCS-1 (FREEDOM) and LCS-2 (INDEPENDENCE) core combat systems and associated support systems
- Develop networked Mission Control Center (MCC) / Integrated Control Center (ICC) 1 console mockups for both LCS hull types
- PC-based Open-architecture for Reconfigurable Training Systems (PORTS)

Acquisition Strategy

- PORTS ID/IQC (planned award Sep 2011)

Period of Performance

- 36 months (all options)

Milestones

3rd Qtr FY 12 — RFP Release

4th Qtr FY 12 — Contract Award

Point of Contact

Name: John Freeman

Organization: NAWCTSD, Surface

Phone: 407-380-4029

Email: john.l.freeman@navy.mil

Funding

- $5.5M

Current Contract/Original Developer/OEM (if recompete)

- N61339-05-D-0027 / Northrop Grumman Information Systems

LCS Mission Bay Trainers

Description/Summary of Program Requirements

- Design and development of blended solution of shipset hardware and virtual training systems
- Design Mission Bay trainer for LTF San Diego for shared resources
  - Both Austal and Lockheed variants to be trained in a shared facility
- Design and development of two Mission Bay trainers in San Diego and two on the East Coast
- Austal and Lockheed Martin ship cranes provided as GFE

Acquisition Strategy

- TBD

Period of Performance

36 months (all options)

Milestones

Point of Contact

Name: John Freeman
Organization: NAWCTSD, Surface
Phone: 407-380-4029
Email: john.l.freeman@navy.mil

Funding

- Base year estimate not determined
- Anticipate substantial growth across the FYDP

Current Contract/Original Developer/OEM (if recompete)

- No current contract as this is a new procurement to develop training materials for the LCS prototype variants.

LCS Contractor Operations & Maintenance Support (COMS)

Description/Summary of Program Requirements

- This will be a performance-based services acquisition that will initially provide for operations & maintenance of the LCS 1 & 2 Shore Based Trainers (SBT) located at the LCS Training Facility (LTF), San Diego, CA.

- Contract performance metrics will likely include time factor to respond to service calls and time to repair. Contract structure may allow for monetary penalties when performance metrics are not achieved. The desired outcome is to achieve a minimum of 95% trainer availability of both LCS SBTs.

Acquisition Strategy

- FTSS III, Competitive

Period of Performance

- Base year with 4 option years

Milestones

1st Qtr FY 13 — RFP Release

3rd Qtr FY 13 — Contract Award

Point of Contact

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Funding

- $1.2M (base year estimate)

- Anticipate substantial growth across the FYDP

Current Contract/Original Developer/OEM (if recompete)

N/A

LCS Training Courses Development

Description/Summary of Program Requirements

- Requirements to procure:
  1) Design and development of new Training Curriculum for crew members of both LCS variants (approximately 4,000 curriculum hours per ship variant)
  2) Design and development of three mission modules (approximately 2,000 curriculum hours)
  3) Delivery of electronic training systems (student workstations, instructor stations, servers, audio visual equipment, furniture, network infrastructure).
- Substantial Front End Analysis data will be provided to the developer in the form of job, duty, performance tasks, subtasks, media selection, training objectives, course master schedule and learning hierarchy

Acquisition Strategy

- new contract vehicle
- full and open procurement - small business set aside determination after evaluation of sources sought responses
- multiple single awards

Period of Performance

- Five year ordering period under each single award

Milestones

4th Qtr FY 11 — RFP Release

2nd Qtr FY 12 — Contract Award

Point of Contact

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Email: john.l.freeman@navy.mil

Funding

- RDT&E approximately 250M over five years

Current Contract/Original Developer/OEM (if recompete)

- No current contract as this is a new procurement to develop training materials for the LCS prototype variants.

Summary

- FEA used to develop training requirements
- Training Strategy based on T2Q – T2C to develop Ship or Strike Groups Ready for Tasking and will provide Interoperability
- SBT Courses and SWOS courses are 1st step to T2Q and T2C
- Rapid increases in T2Q and T2C development FY 12 to FY 15
- New trainers and VR Centric technology starts to land in SDGO in 2015

Readiness Control Officer (RCO)
Shorebased Trainer (SBT)
Demonstration

Questions & Answers